Module I

Introduction

OBJECTIVES

I. Describe the reasons for implementing Conduct of Operations at DOE Facilities.

I. **Purpose of Study Guide:**

The purpose of this study guide is to instruct DOE personnel in understanding the principles of conduct of operations and its implication on safety to the employee, equipment, and environment, as well as its impact on the productivity at the DOE sites.

The course also covers assessment methodology, performance measures, and other CONOPS related directives such as DOE/EH-0256T, Radiological Controls (RADCON) Manual; DOE O 232.1, Occurrence Reporting and Procedures of Operations Information; DOE O 430.1, Life Cycle Asset Management; DOE 5700.6C, Quality Assurance; and 10CFR Part 830, Nuclear Safety Management

II. **What is Conduct of Operations?**

Conduct of Operations is a method of performing work that helps to ensure quality, consistency, and safety in operations.

A. Conduct of Operations applies to everyone regardless of how minimal the hazards the worker may be exposed to during the daily performance of his/her job.

B. Conduct of Operations emphasizes the fundamental attributes to achieve success in every organization. For example proper communications, turnover, and goal setting are important to successful organizations.

C. DOE 5480.19:
This Order addresses Conduct of Operations requirements for DOE Nuclear Facilities, and includes eighteen chapters (in Attachment 1 to the Order).

DOE 5480.19:

1. Is one of the most cross cutting Orders in DOE - it addresses not only operations, but also quality assurance, training, radiological controls, and maintenance, just to name a few.
2. Represents a departure from an “expert” based system to “standard” based system. DOE 5480.19 establishes a standard by which trained workers can conduct their duties consistently from operation to operation.
3. Proposes principles and guidelines that promote safety to workers, equipment, and the environment while ensuring quality output.
4. Is a safety order, the concepts of which apply to everyone.

III. What does Conduct of Operations do for DOE?

Conduct of Operations:

A. Establishes standards of excellence in DOE operations by providing requirements and guidelines.

B. Establishes uniform standards in DOE facilities by applying the concepts to all department elements and contractors.

C. Promotes safety and effectiveness.

D. In other words:
   1. By applying the principles outlined in DOE 5480.19, DOE will promote safety and effectiveness. This translates into saving time, money, and possibly preventing injuries to workers.
   2. Conduct of Operations principles prevents injuries. Too many injuries and sometimes even deaths have occurred due to “dumb” mistakes and complacency.

3. Simply put, many DOE facilities do dangerous operations. Conduct of Operations, if applied properly, will minimize the potential for mishaps.

IV. **History and Development of Conduct of Operations:**
The following bullets give a basic summary of the cause and some of the more significant results of three well recognized accidents. Common to the corrective actions for these accidents was a need to improve the state of Conduct of Operations and to improve the level of discipline in daily operations.

A. **Three Mile Island:**
1. Cause: A chain of minor equipment failure, maintenance oversight, and operator deficiencies.
2. Result: The worst nuclear power accident in U.S. history (in terms of $ spent to correct). Billions of dollars spent on cleanup.

B. **Bhopal Incident:**
1. Cause: Small interrelated problems that compounded into an uncontrollable release. Operators failed to understand and abide by fundamental principles and practices.
2. Result: Methyl Isocyanate release from Union Carbide plant causing approximately 10,000 deaths.

C. **Chernobyl:**
1. Cause: Turbine generator testing gone awry. Lack of control in use of procedures for testing. Operators unfamiliar with plant status.
2. Result: Core meltdown, explosion, and total loss of facility. (Hundreds of) Fatalities. The resulting radiation/contamination release continues to cause measurable worldwide impact.

D. **DOE History of CONOPS Related Occurrences:**
For a better understanding of the following occurrences, read the selected occurrences of Appendix 1. The following bullets give a basic description of some significant, past DOE incidents.

1. Improper Lockout/Tagout
2. Fork lift accident
3. Digging Accident

V. **Summary:**

In the aftermath of the Three Mile Island incident the director of another very successful nuclear reactor program responded during a congressional inquiry that the “secret” to the success of that program was ”Far from a simple gimmick”.

Rather, successful team operations depend upon a streamlined organizational structure; talented, well-trained players; well-defined goals and operational rules; continuous self-critical observation; and above all, pro-active managers who set high standards and then proceed to consistently implement those standards every day in front of their associates. Without a robust Conduct of Operations environment , the dangers of complex equipment operation escalate dramatically.

VI. **Organization of Presentation into Six Key Areas:**

The eighteen chapters of Attachment 1 to DOE 5480.19 have been grouped into the following six sections for sake of logical presentation. The following chapters will be presented in these groupings.

Module	Title	Chapters
II	Operations Management	1, 5, 14, 15
III	Routine Operations	2, 3, 4, 11, 12, 13
IV	Equipment Control	8, 9, 10, 18
V	Control and Use of Procedures	16, 17
VIII	Investigation and Notifications	6, 7

References and Suggested Reading

DOE 5480.19
Introduction Section

Selected DOE Occurrences (Appendix 1)

DOE-EM-STD-5505-96 Operations Assessments